

Biological Monitoring -Data Management-

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Data Management & Analysis Team

History...

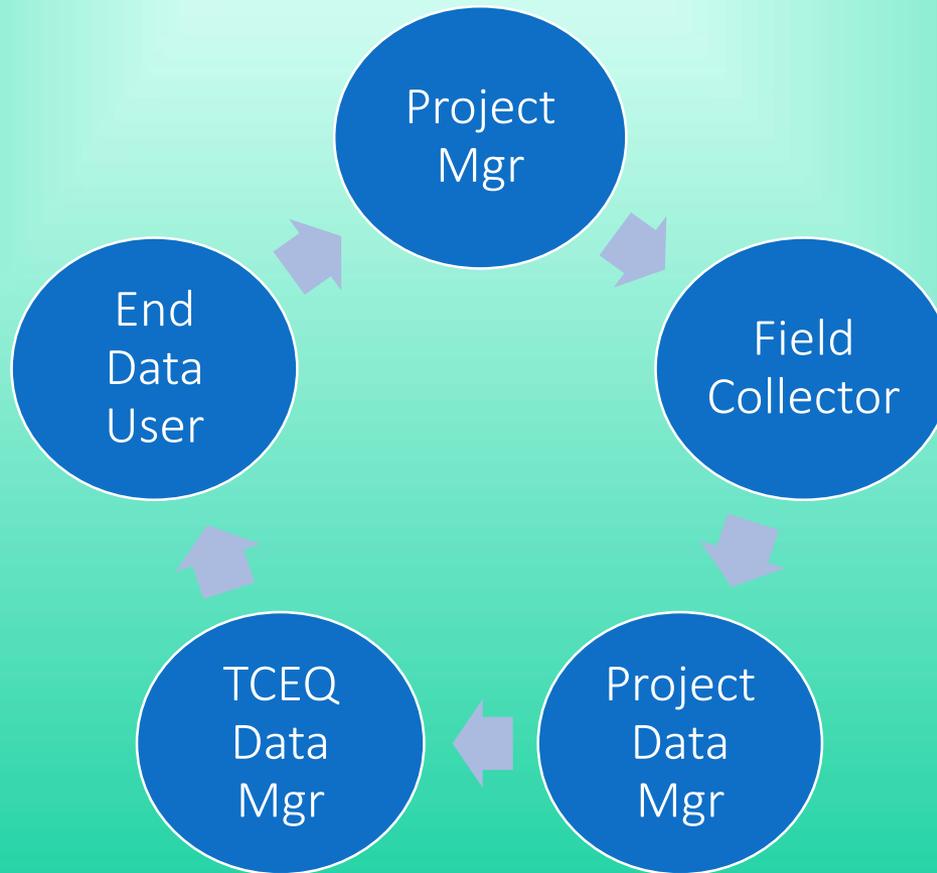
- SWQMIS was released in 2007
- Later enhanced for biological data
- Changed from 'paper' packets to 'electronic' packets
- Now, biological data can be warehoused AND reported from SWQMIS
- Adds value to monitoring effort and data usability

Data Management Resources

- DMRG (Ch. 6, 7, and 12)
- Procedures Manual, Volume 2
- Handouts from this workshop
- Effective QAP/QAPP
- TCEQ Project Manager
- TCEQ Data Manager
- 😊 SWQMIS examples 😊

A word about data management...

Congratulations! We are all data managers.



Data Recording (in the Field)

View QAPP monitoring schedule (generic list, Table B1.1)

View QAPP Table A7 ('expected' list of biological parameters)

****Compare above against DMRG and forms from PM Vol. 2;
KNOW BEFORE YOU GO !!!**

Big difference in forms used and generic sampling categories
(Nekton, for example, can require 8 pages of forms.)

1 sampling category = 1 Tag ID = 1 SWQMIS Sample Set
(refer to screen shot of SWQMIS biological Sample Event)

QAPP Monitoring Schedule

Example from QAP, Table B1.1 (generic information) :

Texas Commission on Environmental Quality
Surface Water Quality Monitoring Program, Water Quality Standards Program, and
Water Quality Assessment Program QAPP

Table B1.1 Sampling Sites and Monitoring Frequencies

Segment	TCEQ Region	Site Description	Station ID	Aquatic Habitat	Benthics	Nekton	Inst Flow	24-HR DO
19##	99	The river at ABC located 99 units from XYZ	2####	2	2	2	2	2

Last 5 columns say: Aquatic Habitat, Benthics, Nekton, Inst Flow, and 24 HR DO.

Now look at the forms used in the field, and the sampling category names.

Biological Monitoring Event 1336220

Sampling Events - Sample Event

History Comments:

Sample Event ID:
Gauge ID:

Station ID:*
Start Date:*
End Date:*

Segment ID:

Station Description:

Comments

Attachments

No file selected.

*Description	Attachments File Name	Remove
Project Activity Summ	Project Activity Summary Report - Swampoodle.docx	<input type="button" value="Remove"/>
Elements of the Biolo	2010&2011-Swampoodle @ W Broad summary_packet_form.doc	<input type="button" value="Remove"/>
Summary of Attachme	Summary of Attachments.docx	<input type="button" value="Remove"/>

View/Edit Sample Sets

Sample Set Id	Station Id	Rfa Tag Id	Start Date	Submitting Entity	Collecting Entity	Monitoring Type	Sampling Category	Data type
13686599	15342		Aug 31, 2011	WC	FO	BS	BIO_HABITAT_TCEQ_PRTS123_PROTO	Habitat
13686593	15342		Aug 24, 2011	WC	FO	BS	BIO_BENTHMACROS_RAPID_BIO_QUAL	Benthic Macroinvertebrate
13686592	15342		Aug 24, 2011	WC	FO	BS	BIO_NEK_SEINING	Nekton
13686591	15342		Aug 24, 2011	WC	FO	BS	BIO_NEK_ELECTROFISHING	Nekton
13686590	15342		Aug 24, 2011	WC	FO	BS	BIO_NEK_TX_REG_INDEX_SUM&METAD	Nekton
13027436	15342			WC	FO	BS	24 HOUR FIELD MEASUREMENTS	Field Measurement
13023131	15342			WC	FO	BS	ROUTINE FIELD MEASUREMENTS	Field Measurement
13023130	15342	1278779		WC	FO	BS	ROUTINE CHEMICAL MEASUREMENTS	Analytical Result

SWQMIS Biological Monitoring Event

The previous slide was a screen shot showing:

- SWQMIS Sample Event with attached BLOB files for the Sample Event
- Table of 8 Sample Sets reported for this Sample Event

Sample Sets were:

- Habitat – TCEQ Parts 1, 2, and 3 Protocol
- Benthic Macroinvertebrates – Rapid Bioassessment, Qualitative
- Nekton - Seining
- Nekton – Electrofishing
- Nekton – TX Regional Index Summary & Metadata
- 24 Hour Field Measurements
- Routine Field Measurements
- Routine Chemistry

Biological Monitoring Event

- Locals use Bull Creek
- Historical – Lampasas Trail crossing with wagon ruts
- City Park – recreational use
- Small off-leash dog area
- Hiking trails for use by many



Biological Monitoring Event

Sometimes the use can be heavy... Leashed, and unleashed



Biological Monitoring Event

- After the monitoring event the data needs to be processed.
- Remember, in SWQMIS the monitoring will be represented by a Sample Event and multiple Sample Sets, plus BLOB files.
- What is a BLOB file? BLOB = binary large object and can be a .txt file containing a large amount of data, a .pdf file, an Excel spreadsheet, a document containing photos or images, etc.
- So it's basically 'just a file' and will have a size limitation. In SWQMIS it's 15 MB per attachment.
- BLOBs should be attached to the Sample Event in SWQMIS and to each Sample Set – for Biological Monitoring.

How does your data go into SWQMIS?

- If you work for the TCEQ and you manually enter data into SWQMIS – you will do the same for your biological data Sample Sets and BLOB files.
- If you are a contractor and your data is loaded into SWQMIS by Data Management, you will submit your biological data using the same process (flat files) however your BLOB files will need to be forwarded to us along with a guide.
- Refer to the DMRG, Ch. 12 – Biological Data Recording and Reporting

Parameter Code 89888

Parameter code 89888 is the key to making biological data work for data entry, and for data querying and reporting.

Parameter code 89888 is to be reported for each Sampling Category. Sampling Category examples are: Nekton electrofishing, Nekton Seining, or Benthic Macroinvertebrates Rapid Bioassessment Qualitative (DMRG Ch. 6, and 12).

* The monitoring trip = the Sample Event.

** The Sampling Categories = the various Tag IDs = Sample Sets within the Sample Event.

Sample Event Attachments/BLOBs

Project Activity Summary Report

Summary Packet - Form

Summary of Attachments

(Note the button for 'Download Attachments >>')

Only Data Managers can 'Remove' BLOBs

Attachments

Browse... No file selected. Add Attachment **Download Attachments >>**

*Description	Attachments File Name	Remove
Project Activity Summ	Project Activity Summary Report - Swampoodle.docx	Remove
Elements of the Biolo	2010&2011-Swampoodle @ W Broad summary_packet_form.doc	Remove
Summary of Attachme	Summary of Attachments.docx	Remove

View/Edit Sample Sets

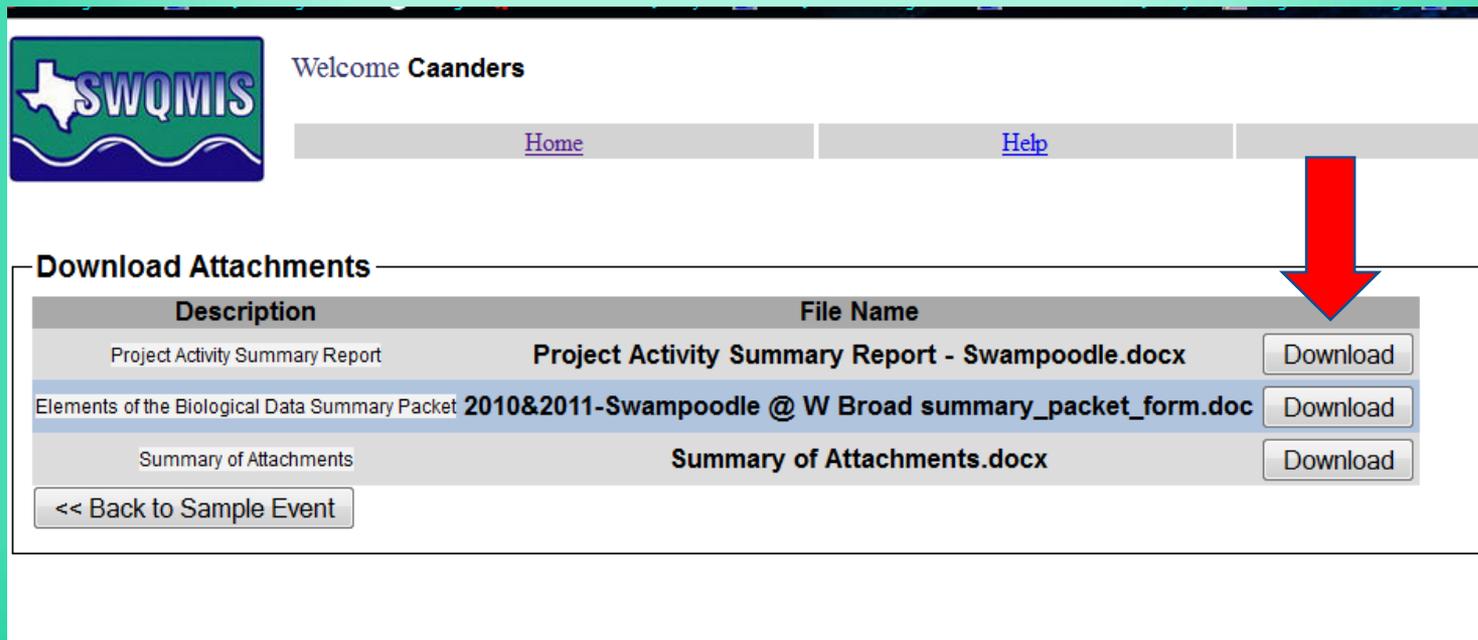
Sample Set Id	Station Id	Rfa Tag Id	Start Date	Submitting Entity	Collecting Entity	Monito
---------------	------------	------------	------------	-------------------	-------------------	--------

Sample Event Attachments/BLOBs

Click the Download Attachments button and you see this:

Note the buttons for 'Download'

Download the file of choice and view the file contents



Welcome **Caanders**

[Home](#) [Help](#)

Download Attachments

Description	File Name	
Project Activity Summary Report	Project Activity Summary Report - Swampoodle.docx	<input type="button" value="Download"/>
Elements of the Biological Data Summary Packet	2010&2011-Swampoodle @ W Broad summary_packet_form.doc	<input type="button" value="Download"/>
Summary of Attachments	Summary of Attachments.docx	<input type="button" value="Download"/>

Sample Event Attachments/BLOBs

Attachment/BLOB #1 – Project Activity Summary Report

Project 344						
Aquatic Life Assessment of Swampoodle Creek @ Broad Street						
(Station ID 15342)						
Station Name	Station ID	Activity Type	Event Start Date	Sample Event #	Sample Set #	Results
Swampoodle Cr (Project 344)	15342	Routine	06/29/2010	1247717	12318632	---
↓	↓	Field	06/29/2010	↓	12318633	---
↓	↓	24 Hour DO	06/27/2010	↓	12318634	DO avg = 5.5
↓	↓	Habitat	06/27/2010	↓	13612830	High - 22
					13662283	
					13612833	
↓	↓	Nekton	06/28/2010	↓	13612834	Intermediate - 40
↓	↓	Benthic	06/29/2010	↓	13612832	Intermediate - 22
↓	↓	Routine	08/24/2010	1260933	12461288	---
↓	↓	Field	08/24/2010	↓	12461289	---
↓	↓	24 Hour DO	08/24/2010	↓	12537310	DO avg = 4.5
↓	↓	Habitat	09/02/2010	↓	13686553	High - 21
					13686536	
					13686537	
↓	↓	Nekton	08/25/2010	↓	13686538	High - 45
↓	↓	Benthic	08/25/2010	↓	13686542	Limited - 17

Station Name	Station ID	Activity Type	Event Start Date	Sample Event #	Sample Set #	Results
Swampoodle Cr (Project 344)	15342	Routine	06/01/2011	1314707	12889024	---
↑	↑	Field	06/01/2011	↓	12889025	---

Sample Set – Habitat TCEQ 1 2 3

Habitat Sample Set with 4 attachments

Sample Event ID: 1336220 Station ID: 15342 Station Description: SWAMPPOODLE CREEK Segment ID: 0304A

Sample Set

Save Save With History Sample Results >>

History Comments:

Sample Set Id: 13686599 RFA Tag No. Start Depth: meters
Field Collector*: MVANBUSK End Depth: meters
Quality Control Type*: FIELD MSR/OBS Details Deepest Depth: meters
Submitting Entity*: WC Details Level of Effort:
Collecting Entity Id*: FO Details Composite Category: Details
Monitoring Type*: BS Details Composite Type:
Data Type*: Habitat Details Equipment Name:
Sampling Category*: BIO_HABITAT_TCEQ_PRTS123_PROTO Details Equipment Type: Details
Medium*: Other Details Number Of Seconds: (Nekton)
Sample Type*: Details Distance Covered: (Nekton):
Replicate No*: 0 Tissue Type: Details
Start Date: 08/31/2011 Species: Details
Start Time: (HH:mm) 00:00 Production Status: PROD
End Date*: 08/31/2011 Data Validation Level for Sample Set*: 0 Details
End Time: (HH:mm) 00:00 Project Name*: Swampoodle Creek ALA
Collector Observations: Comments:

Attachments

Browse... No file selected. Add Attachment Download Attachments >>

Description	Attachments File Name	Remove
Part 1	Swampoodle-Habitat Assessment Worksheet #1 (08-31-2011).doc	Remove
Part 2	Swampoodle-Habitat Assessment Worksheet #2 (08-31-2011).doc	Remove
Part 3	Swampoodle-Habitat Assessment Worksheet #3 (08-31-2011).doc	Remove
Habitat Photographs	Swampoodle Photographs 2011-08-31.pdf	Remove

Sample Set – Swampoodle Photos

Download the Swampoodle Photographs pdf

Aquatic Life Assessment for Swampoodle Creek located in Texarkana (Bowie County, Texas). Station # 15342



Photograph 1. Swampoodle Creek, Station # 15342, Transect #1 - Left Bank.



Photograph 2. Swampoodle Creek, Station # 15342, Transect #1 - Right Bank.

Aquatic Life Assessment Photographs. Photographs taken August 31, 2011, TCEQ Tyler Region SWQM Program

Sample Set – Swampoodle Photos

Swampoodle Photo pdf file details:

- 10 page file
- 2 photos per page
- File size = 2.5 MB
- Used Adobe's Acrobat PDFMaker 10.1 for Word

So your photos can go into a Word document, 2 per page, with document headers / footers, and individual photo captions.

Use DMRG guidance for file naming conventions.

Sample Event Attachments/BLOBs

Attachments

Browse... No file selected. Add Attachment Download Attachments >>

*Description	Attachments File Name	Remove
Project Activity Summ	Project Activity Summary Report - Swampoodle.docx	Remove
Elements of the Biolo	2010&2011-Swampoodle @ W Broad summary_packet_form.doc	Remove
Summary of Attachme	Summary of Attachments.docx	Remove

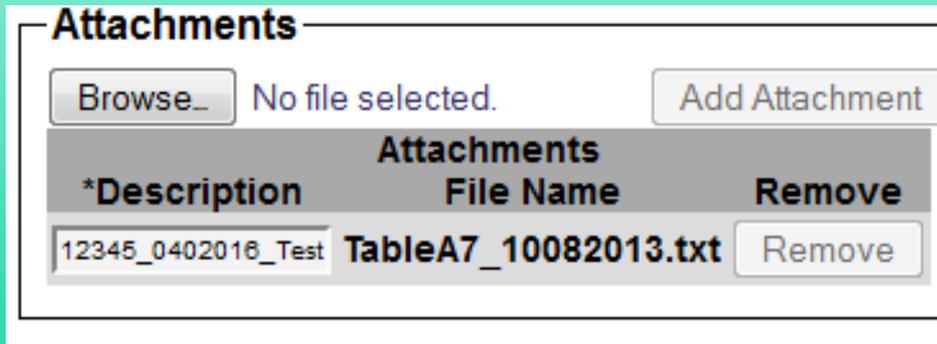
View/Edit Sample Sets

Sample Set Id	Station Id	Rfa Tag Id	Start Date	Submitting Entity	Collecting Entity	Monitoring Type
12686500	15242		Apr 21, 2011	WC	EO	PS

Add an Attachment/BLOBs

Five steps:

1. Place screen in 'Edit' mode; go to Attachment area
2. 'Browse' – locate attachment file; uses Windows Explorer
3. Click 'Add Attachment'; the File Name is added
4. Enter a 'Description' – (suggest StationID + EndDate + info)
5. Click 'Save' or 'Save with History' at top of screen.



The screenshot shows a web interface for managing attachments. At the top, there is a section titled "Attachments" with a "Browse..." button, the text "No file selected.", and an "Add Attachment" button. Below this is a table with the following structure:

*Description	File Name	Remove
12345_0402016_Test	TableA7_10082013.txt	Remove

Querying for Biological Data



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[Help](#)

[History](#)

[About](#)

- *Your password will expire on 06/14/2016.*

Home

Monitoring Stations

Search/View/Edit

Equipment

Equipment - Search/View/Edit

Geographical Areas

Geographic Places Search

Constituents

Constituents - Search/View/Edit

Sampling

RFA - Search/View/Edit

Comparison Information

Search/View/Edit

Projects

Project - Search/View/Edit

Reports and Extracts

Parameter Inventory Report

- Parameter Inventory Report
- Single Parameter Report
- Monitoring Station Inventory Report
- Selective Data Report
- Raw Data Report
- Full Raw Data Export
- RFA Status Report
- Sampling History Report
- Comparison Information Report
- Upload Tracking Info Report
- Biological Raw Data Report**

Maps (GIS)

Display Full Extent Map

Assessment

Segment - Search/View/Edit

Administration

Change My Password

Forms

System Change Request

Querying for Biological Data

To locate Biological data in SWQMIS, do the following:

From the SWQMIS home page, locate the Reports and Extracts module and select the 'Biological Raw Data Report' option

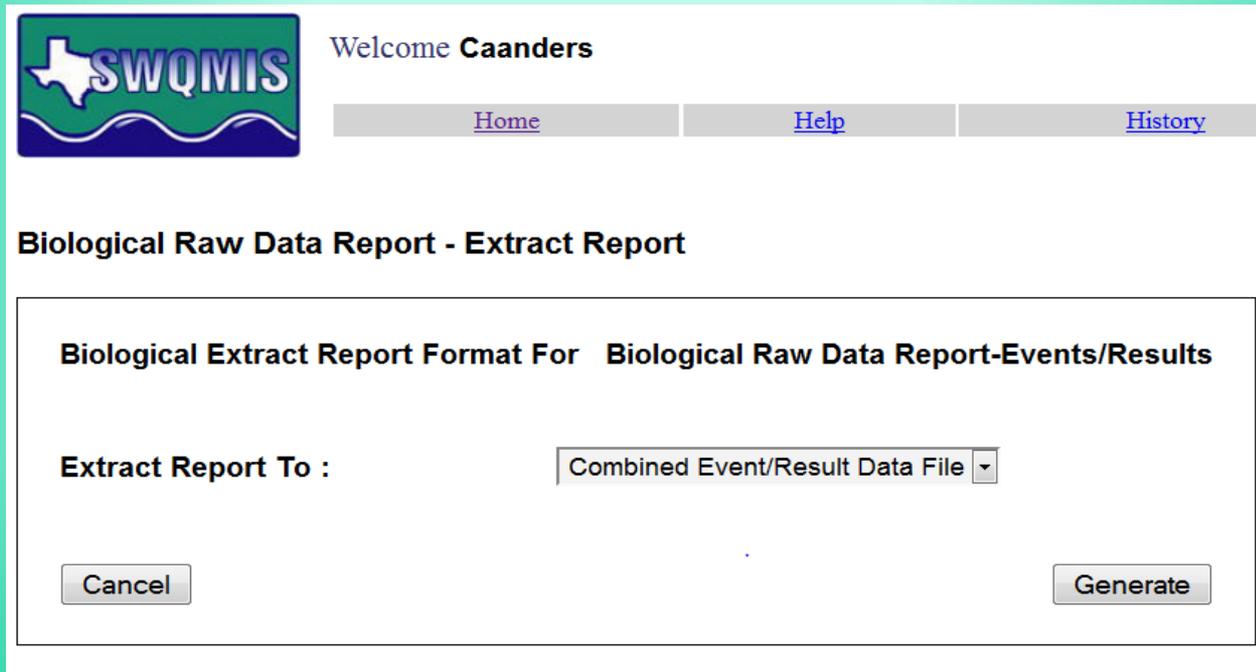
Add 1 line to the query builder and search for a geographical feature (Segment ID = 121* used in this example)

The screenshot shows the SWQMIS web interface. At the top left is the SWQMIS logo with a map of Texas. To its right, it says 'Welcome Caanders'. Below the logo are 'Home' and 'Help' links. The main heading is 'Biological Raw Data Report - Station Selection'. Below this is a query builder section titled 'Enter query criteria for Biological Raw Data Report - Stations' with a 'MAP' button. The query builder has a table with columns: 'Criterion', 'Operator', 'Value', and 'And/Or'. A single row is entered with 'Segment ID' in the Criterion column, '=' in the Operator column, and '121*' in the Value column. There is a 'delete' link at the end of the row. Below the table are buttons for 'Add Row' and 'Estimate Number of Records' (displaying '8'). There are also 'Search' and 'Clear' buttons. At the bottom, there is a table header with columns: 'Monitoring Station ID', 'Description', 'Segment', 'On Segment', and 'TCEQ Region'. There are 'Cancel' and 'Next>>' buttons at the bottom of the interface.

Criterion	Operator	Value	And/Or
Segment ID	=	121*	delete

Querying for Biological Data

Click 'Next' on the next 2 screens, and then 'Generate' on the Extract Report screen.



The screenshot shows the SWQMIS web application interface. At the top left is the SWQMIS logo, which features a white outline of the state of Texas on a green background with blue waves below it. To the right of the logo, the text "Welcome Caanders" is displayed. Below this, there is a navigation bar with three buttons: "Home", "Help", and "History", each in blue text on a grey background. The main content area is titled "Biological Raw Data Report - Extract Report". Below the title, there is a section titled "Biological Extract Report Format For Biological Raw Data Report-Events/Results". Underneath this, the text "Extract Report To :" is followed by a dropdown menu that currently displays "Combined Event/Result Data File". At the bottom of the form, there are two buttons: "Cancel" on the left and "Generate" on the right.

SWQMIS

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Biological Raw Data Report - Extract Report

Biological Extract Report Format For Biological Raw Data Report-Events/Results

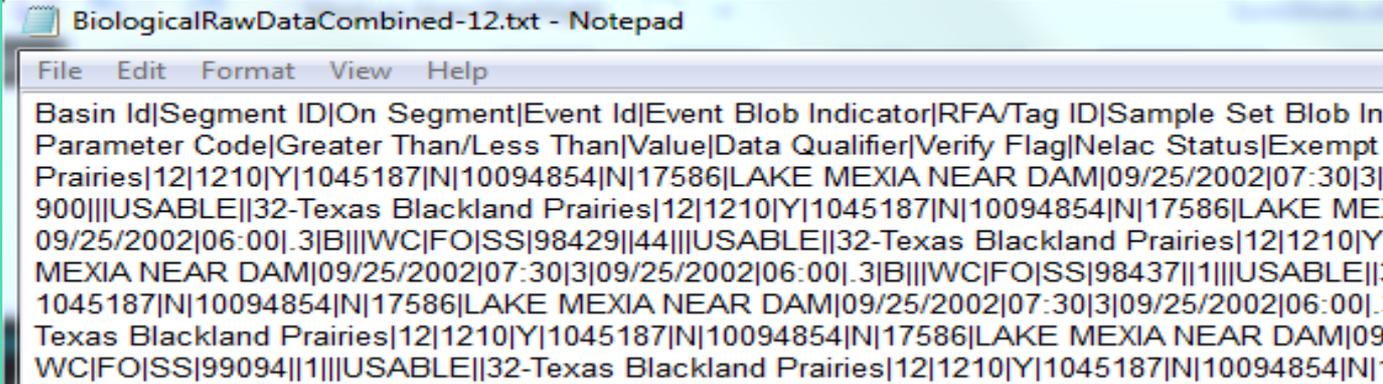
Extract Report To :

Querying for Biological Data

The system will generate a pop-up window asking what you want to do with the data file.

Save the file to your local drive as a .txt file.

It will be pipe-delimited data that looks like this:

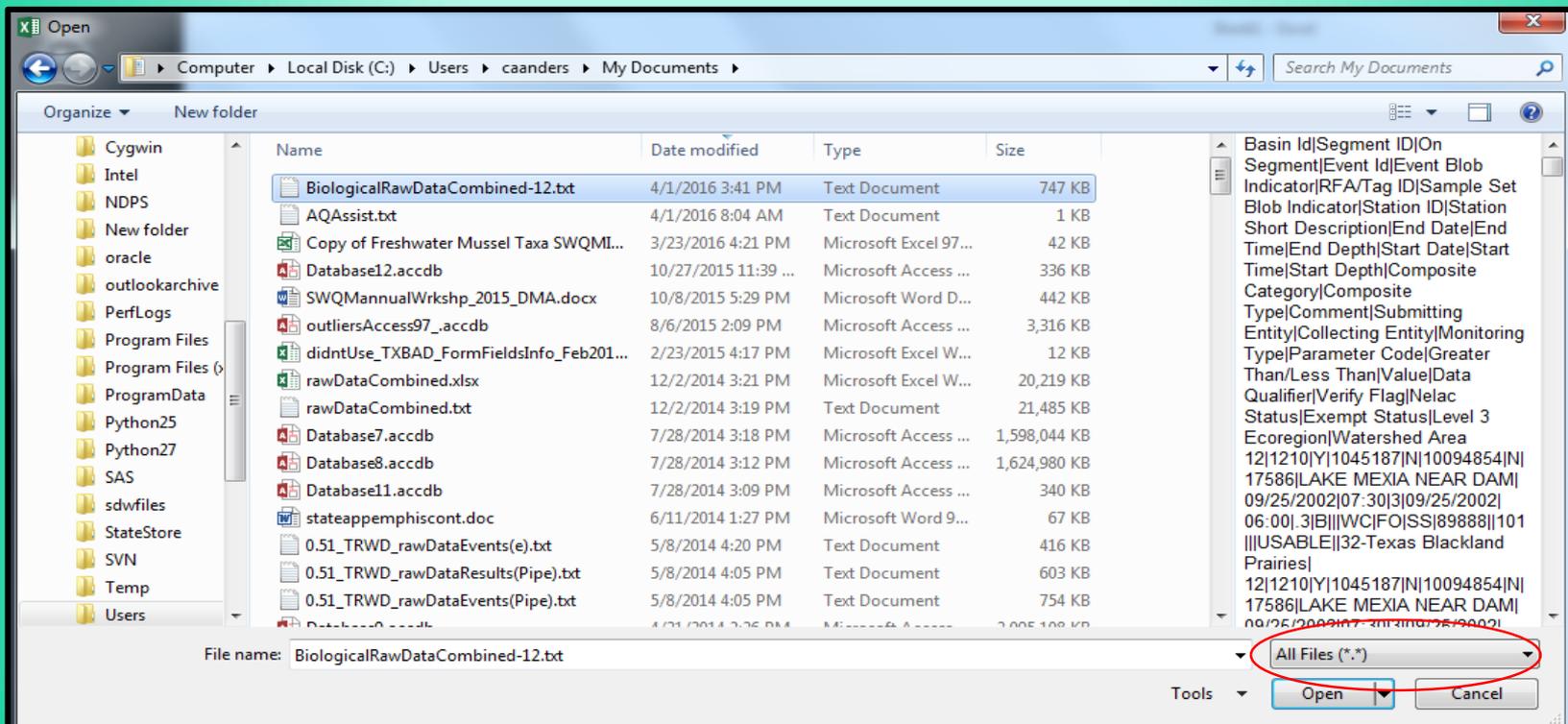


```
BiologicalRawDataCombined-12.txt - Notepad
File Edit Format View Help
Basin Id|Segment ID|On Segment|Event Id|Event Blob Indicator|RFA/Tag ID|Sample Set Blob In
Parameter Code|Greater Than/Less Than|Value|Data Qualifier|Verify Flag|Nelac Status|Exempt
Prairies|12|1210|Y|1045187|N|10094854|N|17586|LAKE MEXIA NEAR DAM|09/25/2002|07:30|3|
900|||USABLE||32-Texas Blackland Prairies|12|1210|Y|1045187|N|10094854|N|17586|LAKE ME
09/25/2002|06:00|.3|B|||WC|FO|SS|98429||44|||USABLE||32-Texas Blackland Prairies|12|1210|Y
MEXIA NEAR DAM|09/25/2002|07:30|3|09/25/2002|06:00|.3|B|||WC|FO|SS|98437||1|||USABLE||
1045187|N|10094854|N|17586|LAKE MEXIA NEAR DAM|09/25/2002|07:30|3|09/25/2002|06:00|.
Texas Blackland Prairies|12|1210|Y|1045187|N|10094854|N|17586|LAKE MEXIA NEAR DAM|09
WC|FO|SS|99094||1|||USABLE||32-Texas Blackland Prairies|12|1210|Y|1045187|N|10094854|N|
```

Querying for Biological Data

Next Step - Open Excel

Select 'File' -> 'Open' and browse to the .txt file you just saved. Excel will think you are looking for an Excel file, so tell it to look for files of all types (lower right of 'Open' pop-up).



Querying for Biological Data

Step 1 of 3 - Select data file type 'Delimited', then click 'Next'

Text Import Wizard - Step 1 of 3

The Text Wizard has determined that your data is Fixed Width.
If this is correct, choose Next, or choose the data type that best describes your data.

Original data type

Choose the file type that best describes your data:

Delimited - Characters such as commas or tabs separate each field.

Fixed width - Fields are aligned in columns with spaces between each field.

Start import at row: File origin:

My data has headers.

Preview of file C:\Users\caanders\Documents\BiologicalRawDataCombined-12.txt.

	Basin Id	Segment ID	On Segment	Event Id	Event Blob Indicator	RFA/Tag ID	S				
1	12	1210	Y	1045187	N	10094854	N	17586	LAKE MEXIA NEAR DAM	09/25/2002	07:30
2	12	1210	Y	1045187	N	10094854	N	17586	LAKE MEXIA NEAR DAM	09/25/2002	07:30
3	12	1210	Y	1045187	N	10094854	N	17586	LAKE MEXIA NEAR DAM	09/25/2002	07:30
4	12	1210	Y	1045187	N	10094854	N	17586	LAKE MEXIA NEAR DAM	09/25/2002	07:30
5	12	1210	Y	1045187	N	10094854	N	17586	LAKE MEXIA NEAR DAM	09/25/2002	07:30

Buttons: Cancel, < Back, Next >, Finish

Querying for Biological Data

Step 2 of 3 - Check 'Other' for type of Delimiter, and enter a 'pipe' into the box by 'Other'.

Text Import Wizard - Step 2 of 3

This screen lets you set the delimiters your data contains. You can see how your text is affected in the preview below.

Delimiters

- Tab
- Semicolon
- Comma
- Space
- Other: |

Treat consecutive delimiters as one

Text qualifier: " ▾

Data preview

Basin Id	Segment ID	On Segment	Event Id	Event Blob Indicator	RFA/Tag ID	Sam
12	1210	Y	1045187	N	10094854	N
12	1210	Y	1045187	N	10094854	N
12	1210	Y	1045187	N	10094854	N
12	1210	Y	1045187	N	10094854	N

Cancel < Back Next > Finish

Querying for Biological Data

Step 3 of 3 - Click 'Finish'

Text Import Wizard - Step 3 of 3

This screen lets you select each column and set the Data Format.

Column data format

General
 Text
 Date: MDY
 Do not import column (skip)

'General' converts numeric values to numbers, date values to dates, and all remaining values to text.

Advanced...

Data preview

General	General	General	General	General	General	Gen
Basin Id	Segment ID	On Segment	Event Id	Event Blob Indicator	RFA/Tag ID	Sam
12	1210	Y	1045187	N	10094854	N
12	1210	Y	1045187	N	10094854	N
12	1210	Y	1045187	N	10094854	N
12	1210	Y	1045187	N	10094854	N

Cancel < Back Next > Finish

Querying for Biological Data

Now it appears to be in spreadsheet format.

Look for the column for 'Event Blob Indicator' – Column E

A 'Y' = there's an attachment at the Sample Event level

	A	B	C	D	E	F	G	H	I
1	Basin Id	Segment I	On Segme	Event Id	Event Blo	RPA/Tag II	Sample Se	Station ID	Station Sh
2	3	0304A	Y	1336220	Y	13023131	N	15342	SWAMPOI
3	3	0304A	Y	1336220	Y	13027436	Y	15342	SWAMPOI
4	3	0304A	Y	1336220	Y	13027436	Y	15342	SWAMPOI
5	3	0304A	Y	1336220	Y	1278779	N	15342	SWAMPOI
6	3	0304A	Y	1336220	Y	13686591	Y	15342	SWAMPOI
7	3	0304A	Y	1336220	Y	13686593	Y	15342	SWAMPOI
8	3	0304A	Y	1336220	Y	13686599	Y	15342	SWAMPOI
9	3	0304A	Y	1336220	Y	13686599	Y	15342	SWAMPOI
10	3	0304A	Y	1336220	Y	13686599	Y	15342	SWAMPOI
11	3	0304A	Y	1336220	Y	13686599	Y	15342	SWAMPOI
12	3	0304A	Y	1336220	Y	13686599	Y	15342	SWAMPOI
13	3	0304A	Y	1336220	Y	13686599	Y	15342	SWAMPOI
14	3	0304A	Y	1336220	Y	13027436	Y	15342	SWAMPOI
15	3	0304A	Y	1336220	Y	13027436	Y	15342	SWAMPOI

Querying for Biological Data

Reminder:

- Query by geographical feature (station, segment, or basin) for best results
- If there is a Sample Event BLOB ('Y') you can go back into the Sampling module and locate the Sample Event and review the Sample Event (and BLOB files), and the Sample Sets (and BLOB files).
- Without reporting parameter code 89888 and associated values for Sampling Categories, the data usability will be low.
- Code 89888 applies to both manually entered data (TCEQ staff) and contractor deliverables/flat files.

Questions?

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